AN ANEMONE FISH AND A CHAETODONT FISH, NEW TO THE JAPANESE FISH FAUNA

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With Plate I

In the early autumn of 1963, I had a chance to obtain two species of handsome coral fishes. One, an anemone fish, was captured by divers of the Suma Aquarium with SCUBA near the Amami Islands and reared in that aquarium. The other, a chaetodont fish, was collected by myself at a certain rocky reef near our laboratory also with SCUBA.

Examining closely these two species, it was revealed that the former was *Amphiprion perideraion* BLEEKER and the latter was *Centropyge bicolor* (BLOCH). They are both new to the Japanese fish fauna, and can easily be distinguished respectively from other Japanese species of genera *Amphiprion* and *Centropyge* by their peculiar colourations.

Several individuals of *A. perideraion* have been imported from the Okinawa Islands by tropical fish dealers in these years under the commercial name of "Skunk Fish". This species was already referred in OKUNO's paper (1963) as one of Japanese sharrow water inhabitants, though without any taxonomical descriptions. Some living specimens of *C. bicolor* were also imported from the Fiji Islands in 1963 under the commercial name of "Two-tone coloured Angel".

Here in this paper, the distinctive characters of these two fishes are described together with their colouration when alive and some ecological findings.

The sole specimen of *C. bicolor* was so valuable to be exhibited at our aquarium and for ecological observations in captive environment that all the measurements were carried out under anaesthetization with 0.01% MS 222–SANDOZ just after the fish was collected. After that, it was kept in a 100 litter exhibition tank in our aquarium for about four months, but unfortunately, it was heavily injured to death by other fishes.

I am very grateful to Dr. R. OKUNO and Mr. M. NISHIGUCHI of the Suma Aquarium for their kindness in offering me their important samples and data. Also I wish to express here my sincere thanks to Prof. K. MATSUBARA and Dr.

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Amphiprion perideraion BLEEKER

(Hanabira-kumanomi: new Japanese name)

(Plate I, Above)

Three specimens, 32 to 36 mm in standard length, collected by M. NISHIGUCHI at Kakeroma-jima of the Amami Islands in June 1962, and five specimens, 35 to 57 mm in standard length, imported from the Okinawa Islands in August 1963, were studied.

Dorsal spines X, rays 16; anal spines II, rays 13; pectoral rays 17; scales 49 or 50 in longitudinal series, 5 above lateral line. Body depth 2.1 to 2.3 (2.2); head length (tip of snout to tip of longest opercular spine) 3.1 or 3.2 (3.2); both in standerd length. Snout 3.2 to 3.4 (3.3); upper jaw 2.9 to 3.0 (2.9); eye diameter 3.0 to 3.2 (3.1); interorbital space 2.8 to 3.1 (3.0); depth of caudal peduncle 1.8 to 1.9 (1.8); pectoral fin length 1.3 to 1.5 (1.4); all in head length.

Body relatively low, oblong in shape, profile of head slightly convex above eyes; orbital bones with strong serrations ventrally, posterior margin of preopercle roughly serrate, opercle, subopercle and interopercle with strong radiating spines respectively; dorsal and anal fins also low, rounded marginally, pelvic fins not elongate, nearly reaching to origin of anal fin when depressed, caudal fin rounded posteriorly.

When alive, body light pinkish yellow laterally and ventrally; head and back of body light reddish brown; a vertical white bar, nearly as broad as diameter of pupil, runs from temporal region to lower margin of subopercle, through anterior part of opercle; a narrow dorso-median white bar, originating interorbital area to origin of dorsal fin; body also with a longitudinal milky white bar dorsally, which is much broader than other ones and generally connects with the dorso-median white bar on head; all rays of dorsal, anal, pelvic and caudal fins slightly pinkish; pectoral fins pale.

In formalin, ground colour of body yellowish; head and back of body light brown; a vertical bar on opercular regions chalky white, but dorso-median and marginal milky bars indistinct; all fins pale yellowish.

According to OKUNO (1963), in the coastal waters of the Amami Islands this fish was found really living in a close association with big sea anemones, particularly with *Parasicyonis actinostoloides* WASSILIEFF, forming a small group of two to five individuals at each sea anemone. It is told of three individuals of this fish, reared in an exhibition tank of the Suma Aquarium together with other crown fishes and some sea anemones, that they dispersed an individual of *A. frenatus*

bigger than they to occupy a certain sea anemone to which *A. frenatus* was attracted, too. On the contrary, three of five individuals of this species reared in our aquarium were unable to possess any sea anemone, being attacked by a bigger fish referable to *A. xanthurus* kept since long before, but two larger individuals acquired some.

Above-mentioned fact seems to show that the dependence on sea anemones as a refuge is rather stronger in *A. perideraion* than in other crown fishes.

The relationship between crown fishes and sea anemones is said to be the mutual symbiosis (GOHAR, 1948 and OKUNO and AOKI, 1959), and the behaviour transporting food to sea anemone is well observed on *A. xanthurus*, but such a behaviour has never been observed on *A. perideraion*.

This species is hitherto known from the Philippine waters to the Indo-Australian and Melanesian Archipelagoes.

Centropyge bicolor (BLOCH)

(Somewake-yakko: new Japanese name)

(Plate I, Below)

One specimen, 45 mm in standard length, collected by myself at Tô-shima near the laboratory in September 1963, was studied.

Dorsal spine XV, rays 14; Anal spines III, rays 18; pectoral rays 16; scales about 48 in longitudinal series. Lateral line arched, near dorsal profile, terminating at end of soft dorsal fin. Body depth 1.7; head 3.3; both in standard length. Snout 3.0; eye diameter 3.4; interorbital space 3.4; depth of caudal peduncle 2.0; pectoral fin 1.3; all in head length.

Body compressed, oblong in shape; dorsal profile of head slightly convex above eyes; dorsal and anal fins pointed distally, 4th dorsal spine the longest; caudal fin rounded posteriorly; pelvic fins not reaching to anal fin when depressed. Scales strongly ctenoid, with numerous horizontal ridges on their surfaces; no auxiliary scale. Hind and lower margin of preorbital free, with fine serrations; preopercle with a strong spine (1.9 in head length) on its lower angle and some denticles on its hind and lower edges.

In life, body bright-yellow anteriorly, navy-blue posteriorly. A characteristic bar, blue-black above and blackish brown below, obliquely runs from forhead to cheek through eye; about 16 vermicular black lines on posterior half of body, and a narrow whitish bar placed just before navy-blue part; anterior part of spiny dorsal, caudal and pelvic fins yellow; posterior part of spiny dorsal, soft dorsal and anal fins navy-blue with numerous black spots; pectoral fins pale.

In formalin, anterior half of body and spiny dorsal, caudal and pelvics uniformly whitish except for dusky part on cheek; broad band on head, hind half of body and dorsal, and anal jet-black.

The fish inhabited around the small rocky cave of Tô-shima Islet near our laboratory at the depth of about six meters; the tidal current is very strong there. It availed an empty shell of *Spondylus butleri* REEVE hanging at the entrance of the cave as its regular refuge. In the aquarium empty shells or hollows of dead reef coral were availed as shelters.

The habit of young *C. bicolor* is quite similar to that of *Pomacanthus semicirculatus* (CUVIER & VALENCIENNES) (OKUNO, 1960 and 1963).

This species is so far known from the Philippine waters to the Indo-Australian Archipelago.

REFERENCES

BEAUFORT, L. F. de, 1946: The fishes of the Indo-Australian Archipelago. VIII. Percomorphi (continued), Cirrhitoidea, Labriformes, Pomacentriformes, xv+508 pp., 56 figs.

FRASER-BRUNNER, A., 1933: A revision of the chaetodont fishes of the subfamily Pomacanthinae. Proc. Zool. Soc. London, 1933, pp. 543–599, figs. 1–29, pl. 1.

GOHAR, H. W. F., 1948: Commensalism between fish and anemone. Publ. Mar. Sta. Ghardaqa, **63**, pp. 5–44.

HERRE, A. W. & H. R. MONTALBAN, 1927: The Philippine butterfly fishes and their allies. Philippine Jour. Sci., **34** (1), pp. 403–478, pls. 1–24.

JORDAN, D. S. & A. SEALE, 1905: The fishes of Samoa. Bull. Bur. Fisher., **25**, pp. 173–455, figs. 1–111, pls. 33–53.

MONTALBAN, H. R., 1927: Pomacentridae of the Philippine Islands. Bur. Sci., Manila, Philippine Islands, Monogr. **24**, pp. 1–117, pls. 1–19.

OKUNO, R.; & T. AOKI, 1959: Some observations on the symbiosis between the pomacentrid fish and the sea anemone. Jour. Jap. Ass. Zoological Gardens and Aquariums, **1** (1), pp. 8–11, 1 fig., 2 tables. (in Japanese)

OKUNO, R.; T. KURIO & M. NISHIGUCHI, 1960: Underwater observations of reef fishes with reference to their micro-habitats and behaviours. 1. *Pomacanthus semicirculatus* (CUVIER & VALENCIENNES). Ibid., **2** (4), pp. 95–97, figs. 1–2, photo. 1. (in Japanese)

OKUNO, R., 1963: Observations and discussions on the social behaviours of marine fishes. Publ. Seto Mar. Biol. Lab., **11** (2), pp. 281–336, figs. 1–6, 23 tables.

SCHUTZ, L. P., 1943: Fishes of the Phoenix and Samoan Islands collected in 1939 during the expedition of the U. S. S. "Bushnell". Bull. U. S. Nat. Mus., **180**, x+316 pp., 27 figs.

————, 1953: Review of the Indo-Pacific anemone fishes, genus *Amphiprion*, with descriptions of two new species. Proc. U. S. Nat. Mus., **103** (3323), pp. 187–201, pls. 9–10.

SCHUTZ, L. P.; W. M. CHAPMAN, E. A. LACHNER & L. P. WOODS, 1960: Fishes of the Marshall and Marianas Islands, II. Families from Mullidae through Stromateidae. Bull. U.S. Nat. Mus., **202**, ix+438 pp., figs. 91–132, pls. 75–123.

WEBER, M. & L. F. de BEAUFORT, 1936: The fishes of the Indo-Australian Archipelago. VII.

EXPLANATION OF PLATE I

Above: Living specimen of *Amphiprion perideraion* BLEEKER, 57 mm in standard length, and big sea anemone *Parasicyonis actinostoloides* WASSILIEFF.

Below: Living specimen of *Centropyge bicolor* (BLOCH), 45 mm in standard length. Photographed in the Shirahama Aquarium by the author.

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